CLAIMS

1. A method for producing tablets of a ceramic nuclear fuel comprising the steps of preparing a molding powder, its granulation, pressing and sintering the resultant tablets, wherein the steps of preparing the molding powder comprises the operations of charging the dosages of starting powdered components and a grinding process initiating agent into a container made of a non-magnetic material, hermetically sealing the container, putting the container together with the powders and ferromagnetic needles into the interior of the tube made of a non-magnetic material placed inside the inductor coil, grinding and intermixing the powders under the action of the ferromagnetic needles moving in the inductor magnetic field, withdrawing the container from the tube, cooling the container, unsealing the container, and discharging the resultant powder mixture therefrom into the granulation unit, CHARACTERIZED in that there are established in the container interior a cylinder-shaped working zone adapted to constantly accommodate the ferromagnetic needles, and an end zone, both of said zones are isolated from each other by a meshed partition impervious to the needles, the dosages of the powders are charged into the working zone through the end zone and the meshed partition, the container is put into the tube interior for the height of the container working zone, said tube being positioned vertically inside the inductor coil, the powders are treated by virtue of the ferromagnetic needles moving in the working zone, and the resultant powder mixture is discharged from the container via the meshed partition and the end zone without unloading the ferromagnetic needles from the working zone.

2. A method as claimed in claim 1, CHARACTERIZED in that the weight of the ferromagnetic needles being loaded are set to be from 2.5% to 90% of the critical mass upon exceeding of which the needles stop rotating in the mixer electromagnetic field.

3. A method as claimed in claim 1, CHARACTERIZED in that the critical mass of the ferromagnetic needles is calculated by the formula:

$$m_{cr} = K_{cr} \cdot V_c \cdot \rho_n,$$

wherein K_{cr} is the criticality factor of loading the mixer with the needles; V_c is the container interior volume corresponding to the height of the electromagnetic field rotation zone; ρ_n is the density of the needle material.

4. A method as claimed in claim 1, CHARACTERIZED in that a total volume of the ceramic powders to be charged into the container is set to be not in excess of 90% of a free volume thereof falling on the electromagnetic field rotation zone.

5. A method as claimed in claim 1, CHARACTERIZED in that use is made of ferromagnetic needles, wherein the ratio of the length thereof to their diameter varies from 8 to 14.

6. A method as claimed in claims 1, 2, 3 and 4, CHARACTERIZED in that the ratio of a total weight of ceramic powders to the weight of ferromagnetic needles is set to range from 0.3 to 3.0, predominantly from 0.5 to 2.0.

7. A method as claimed in claim 1, CHARACTERIZED in that rotation frequency of the electromagnetic field is set to be from 10 to 50 Hz.

8. A method as claimed in claim 1, CHARACTERIZED in that the powders are ground and mixed together for 1-20 minutes.

9. A method as claimed in claim 8, CHARACTERIZED in that the powders are ground and mixed together in a number of cycles for 1-10 minutes.

10. A method as claimed in claim 1, CHARACTERIZED in that all operations at the step of preparing the molding powder are conducted in an inert gas atmosphere.

11. A device for preparing the molding powder in order to carry said method into effect, comprising a protective chamber, a unit for charging dosages of starting powdered components and a grinding process initiating agent into the container, a grinding and intermixing unit for the powders appearing as an inductor having a coil inside which a tube from a non-magnetic material is put, adapted to receive a hermetically sealed cylinder-shaped container from a non-magnetic material adapted to hold the powders and needles from a ferromagnetic material, a powder granulation unit, as well as a container conveying and positioning system, said grinding and intermixing unit for the powders involves vertically arranged axes of said inductor and of said tube, the tube is blanked off at the lower end thereof to form a fragment of the protective chamber, said protective chamber appears as a

circuit and the container is adapted to perform circular motion over said circuit from the charging unit towards the grinding and intermixing unit, next to the granulation unit and again to the charging unit, said circuit of the protective chamber is formed by the process boxes adapted to accommodate the units of the device, and by conveying boxes, and the container conveying and positioning system is provided with elements for vertically moving the container along the tube axis and for tipping over said container to discharge the powder in the zone of the mixture granulation unit.

12. A device as claimed in claim 11, CHARACTERIZED in that the protective chamber is filled with an inert gas atmosphere.

13. A device as claimed in claim 11, CHARACTERIZED in that the protective chamber is provided with a conveying box for the container to withdraw from the protective chamber circuit.

14. A device as claimed in claim 11, CHARACTERIZED in that the housing of the protective chamber is functionally combined with the load-bearing framework of the structure of said device.

15. A device as claimed in claim 11, CHARACTERIZED in that the inductor with the coil is disposed on the outside of said protective chamber.

16. A container for carrying said method into effect, appearing as a cylinder-shaped vessel from a non-magnetic material provided with a sealing unit at an end thereof, CHARACTERIZED in that the hermetic sealing unit appears as a valve having an interior space isolated from the cylinder-shaped vessel of the container by a transversal meshed partition impervious to ferromagnetic needles, said valve being connected to said cylindrical vessel via a flanged joint.

17. A device as claimed in claim 16, CHARACTERIZED in that the flanged joint is separable.

18. A device as claimed in claim 16, CHARACTERIZED in that the valve appears as a ball cock provided with a drive mechanism mounted thereon for the cock to rotate.

19. A device as claimed in claim 16, CHARACTERIZED in that the flanged joint is provided with a platform for the container to be fixed stationary and positioned.

20. A device as claimed in claim 16, CHARACTERIZED in that the cylindrical portion of the vessel making part of the container working zone, on its inner side has a chamfered junction to a flat bottom thereof.